

AMENDMENTS TO THE CLAIMS

1. (Original) A probe comprising:

a support; and

an intermediate excitation medium, which is fixed on said support and is excited when external energy is supplied from the outside, and which causes a first molecule in the vicinity thereof having a binding residue to achieve binding with a binding target which is to be bound to said first molecule.
2. (Original) The probe according to Claim 1, wherein either both or one of said first molecule and said binding target is fixed to a support member.
3. (Original) The probe according to Claim 2, wherein said support is positioned with sufficient accuracy with respect to said support member so as to allow said binding.
4. (Original) The probe according to Claim 3, wherein the accuracy is 1 nm or less.
5. (Currently Amended) The probe according to ~~any one of Claims 1 through 4~~, wherein, when said intermediate excitation medium is excited, said intermediate excitation medium generates binding energy which moves from said intermediate excitation medium in an excited state to said first molecule to achieve said binding.
6. (Original) The probe according to Claim 5, wherein movement of said binding

energy from said intermediate excitation medium in said excited state to said first molecule is excited triplet energy transfer.

7. (Currently Amended) The probe according to ~~any one of Claims 1 through 4~~, wherein, when said intermediate excitation medium is excited, said binding is accomplished based on electron transfer between said intermediate excitation medium in said excited state and said first molecule.

8. (Currently Amended) The probe according to ~~any one of Claims 1 through 7~~, wherein said external energy is light, electrons or ions.

9. (Original) The probe according to Claim 8, wherein said intermediate excitation medium is a photosensitized molecule, and said external energy is said light.

10. (Original) The probe according to Claim 9, wherein said photosensitized molecule comprises a probe branch which forms the end of said probe, and a plurality of binding branches extending radially from the tip of said probe branch on the support side to be fixed by selective binding to said support.

11. (Original) The probe according to Claim 10, wherein said probe branch and said binding branches have different structures, and said plurality of

binding branches branch radially from said tip of said probe branch, forming a tree structure with said probe branch as a trunk.

12. (Currently Amended) The probe according to ~~any of Claims 9 through 11~~, wherein said photosensitized molecule has a dendrimer structure.

13. (Original) The probe according to Claim 12, wherein said dendrimer structure is N-[3-{3,5-bis{3,5-bis[3,5-bis(4-mercaptobenzylthio)benzylthio]benzylthio}benzyloxy}-propionyl-4-nitro-1-naphthylamine.

14. (Currently Amended) The probe according to ~~any of Claims 9 through 13~~, wherein said photosensitized molecule is an N-acetyl-4-nitro-1-naphthylamine derivative.

15. (Currently Amended) The probe according to ~~any of Claims 9 through 14~~, wherein one molecule of said photosensitized molecule is fixed on said support.

16. (Original) The probe according to Claim 8, wherein said intermediate excitation medium is a photocatalyst and said external energy is said light.

17. (Original) The probe according to Claim 16, wherein said photocatalyst is titanium dioxide.

18. (Currently Amended) The probe according to ~~any one of Claims 1 through 17~~, wherein said binding target is a second molecule having a binding residue.

19. (Currently Amended) The probe according to ~~any one of Claims 1 through 17~~, wherein said binding target is a material body other than a molecule.

20. (Currently Amended) The probe according to ~~any one of Claims 1 through 19~~, wherein said intermediate excitation medium is fixed to said support by chemical bonds.

21. (Currently Amended) The probe according to ~~any one of Claims 1 through 20~~, wherein said binding residue is an aliphatic residue having an unsaturated double bond or unsaturated triple bond.

22. (Currently Amended) The probe according to ~~any one of Claims 1 through 20~~, wherein said binding residue is an aromatic residue having an unsaturated double bond or unsaturated triple bond.

23. (Original) The probe according to Claim 22, wherein, when said aromatic residue having said unsaturated double bond is a cinnamic acid group, said intermediate excitation medium is N-[3-{3,5-bis{3,5-bis[3,5-bis(4-mercaptobenzylthio)benzylthio]benzylthio}benzyloxy}-propionyl-4-nitro-1-naphthylamine.

24. (Original) A probe comprising:

a support; and

a molecule which is fixed on said support and which interacts physically with a probe scanning target, wherein

said molecule comprises a probe branch that forms the end of said probe and a plurality of binding branches extending radially from the tip of said probe branch on the support side to be fixed by selective binding to said support.

25. (Original) A probe comprising;

a support; and

a molecule which is fixed on said support and which interacts chemically with a probe scanning target, wherein

said molecule comprises a probe branch that forms the end of said probe and a plurality of binding branches extending radially from the tip of said probe branch on the support side to be fixed by selective binding to said support.

26. (Currently Amended) The probe according to Claim 24 ~~or 25~~, wherein said molecule is a probe molecule which has a dendrimer structure.

27. (Currently Amended) The probe according to Claim 24 ~~or 25~~, wherein said probe branch and said binding branches have different structures, and said plurality of binding branches branch radially from said tip of said probe branch, forming a tree structure with said probe branch as

a trunk.

28. (Original) The probe according to Claim 27, wherein said molecule has a dendrimer structure.

29. (Currently Amended) The probe according to ~~any one of Claims 24 through 28~~, wherein one molecule of said molecule is fixed on said support.

30. (Currently Amended) The probe according to ~~any one of Claims 24 through 29~~, wherein said probe scanning target is a molecule.

31. (Currently Amended) The probe according to ~~any one of Claims 24 through 30~~, wherein said molecule is fixed to said support by chemical bonds.

32. (Original) A probe comprising:
a support; and
an active molecule which is fixed so as to protrude from said support and which acts physically on a probe scanning target, wherein
said active molecule comprises a probe branch that forms the end of said probe and a plurality of binding branches extending radially from the tip of said probe branch on the support side to be fixed by selective binding to said support.

33. (Original) A probe comprising:
a support; and
an active molecule which is fixed so as to protrude from said support and which acts physically on a probe scanning target, wherein said active molecule has a dendrimer structure.
34. (Original) The probe according to Claim 32, wherein said probe branch and said binding branches have different structures, and said plurality of binding branches branch radially from said tip of said probe branch, forming a tree structure with said probe branch as a trunk.
35. (Currently Amended) The probe according to Claim 32 ~~or 34~~, wherein said active molecule has a dendrimer structure.
36. (Currently Amended) The probe according to ~~any one of Claims 32 through 35~~, wherein one molecule of said active molecule is fixed on said support.
37. (Currently Amended) The probe according to ~~any one of Claims 32 through 36~~, wherein said active molecule is fixed to said support by chemical bonds.

CLAIMS

1. A probe comprising:

a support; and

an intermediate excitation medium, which is fixed on

5 said support and is excited when external energy is supplied from the outside, and which causes a first molecule in the vicinity thereof having a binding residue to achieve binding with a binding target which is to be bound to said first molecule.

10 2. The probe according to Claim 1, wherein either both or one of said first molecule and said binding target is fixed to a support member.

3. The probe according to Claim 2, wherein said support is positioned with sufficient accuracy with respect
15 to said support member so as to allow said binding.

4. The probe according to Claim 3, wherein the accuracy is 1 nm or less.

5. The probe according to any one of Claims 1 through 4, wherein, when said intermediate excitation medium is
20 excited, said intermediate excitation medium generates binding energy which moves from said intermediate excitation medium in an excited state to said first molecule to achieve said binding.

6. The probe according to Claim 5, wherein movement
25 of said binding energy from said intermediate excitation medium in said excited state to said first molecule is excited triplet energy transfer.

7. The probe according to any one of Claims 1 through 4, wherein, when said intermediate excitation medium is excited, said binding is accomplished based on electron transfer between said intermediate excitation medium in said excited state and said first molecule.

8. The probe according to any one of Claims 1 through 7, wherein said external energy is light, electrons or ions.

9. The probe according to Claim 8, wherein said intermediate excitation medium is a photosensitized molecule, and

said external energy is said light.

10. The probe according to Claim 9, wherein said photosensitized molecule comprises a probe branch which forms the end of said probe, and a plurality of binding branches extending radially from the tip of said probe branch on the support side to be fixed by selective binding to said support.

11. The probe according to Claim 10, wherein said probe branch and said binding branches have different structures, and said plurality of binding branches branch radially from said tip of said probe branch, forming a tree structure with said probe branch as a trunk.

12. The probe according to any of Claims 9 through 11, wherein said photosensitized molecule has a dendrimer structure.

13. The probe according to Claim 12, wherein said dendrimer structure is N-[3-{3,5-bis{3,5-bis[3,5-bis(4-

mercaptobenzylthio)benzylthio]benzylthio)benzyloxy}-
propionyl-4-nitro-1-naphthylamine.

14. The probe according to any of Claims 9 through 13,
wherein said photosensitized molecule is an N-acetyl-4-
5 nitro-1-naphthylamine derivative.

15. The probe according to any of Claims 9 through 14,
wherein one molecule of said photosensitized molecule is
fixed on said support.

16. The probe according to Claim 8, wherein said
10 intermediate excitation medium is a photocatalyst and said
external energy is said light.

17. The probe according to Claim 16, wherein said
photocatalyst is titanium dioxide.

18. The probe according to any one of Claims 1 through
15 17, wherein said binding target is a second molecule having
a binding residue.

19. The probe according to any one of Claims 1 through
17, wherein said binding target is a material body other
than a molecule.

20 20. The probe according to any one of Claims 1 through
19, wherein said intermediate excitation medium is fixed to
said support by chemical bonds.

21. The probe according to any one of Claims 1 through
20, wherein said binding residue is an aliphatic residue
25 having an unsaturated double bond or unsaturated triple bond.

22. The probe according to any one of Claims 1 through
20, wherein said binding residue is an aromatic residue

having an unsaturated double bond or unsaturated triple bond.

23. The probe according to Claim 22, wherein, when
said aromatic residue having said unsaturated double bond is
a cinnamic acid group, said intermediate excitation medium
5 is N-[3-{3,5-bis{3,5-bis[3,5-bis(4-
mercaptobenzylthio)benzylthio]benzylthio}benzyloxy}-
propionyl-4-nitro-1-naphthylamine.

24. A probe comprising a support; and
an interacting substance which is fixed on said support
10 and which interacts physically with a probe scanning target.

25. A probe comprising a support; and
an interacting substance which is fixed on said support
and which interacts chemically with a probe scanning target.

26. The probe according to Claim 24 or 25, wherein
15 said interacting substance is a molecule.

27. The probe according to Claim 26, wherein said
molecule comprises a probe branch that forms the end of said
probe and a plurality of binding branches extending radially
from the tip of said probe branch on the support side to be
20 fixed by selective binding to said support.

28. The probe according to Claim 27, wherein said
probe branch and said binding branches have different
structures, and the plurality of binding branches branch
radially from said tip of said probe branch, forming a tree
25 structure with said probe branch as a trunk.

29. The probe according to Claim 26 or 28, wherein
said molecule has a dendrimer structure.

30. The probe according to any one of Claims 26 or 29, wherein one molecule of said molecule is fixed on said support.

31. The probe according to any one of Claims 24 through 30, wherein said probe scanning target is a molecule.

32. The probe according to Claim 24 or 25, wherein said interactive substance is a particle having magnetism.

33. The probe according to any one of Claims 24 through 32, wherein said interacting substance is fixed to said support by chemical bonds.

34. A probe comprising:
a support; and
an active molecule which is fixed so as to protrude from said support and which acts physically on a probe scanning target.

35. The probe according to Claim 34, wherein said active molecule comprises a probe branch that forms the end of said probe and a plurality of binding branches extending radially from the tip of said probe branch on the support side to be fixed by selective binding to said support.

36. The probe according to Claim 35, wherein said probe branch and said binding branches have different structures, and said plurality of binding branches branch radially from the tip of said probe branch, forming a tree structure with said probe branch as a trunk.

37. The probe according to any one of Claims 34 through 36, wherein the active molecule has a dendrimer

structure.

38. The probe according to any one of Claims 34 through 37, wherein one molecule of said active molecule is fixed on said support.

5 39. The probe according to any one of Claims 34 through 38, wherein said active molecule is fixed to said support by chemical bonds.